

SCR

16

<TARGET><BILL>SCR 16</BILL><SUBJECT>SCR
16</SUBJECT><COMM>SF IN28</COMM></TARGET>

Fiscal Note

State of Alaska
2014 Legislative Session

Bill Version: SCR 16
Fiscal Note Number: _____
() Publish Date: _____

Identifier: SCR016-LAW-CIV-04-01-14
Title: REQ GOV TO INVESTIGATE COAL RESOURCES
Sponsor: KELLY
Requester: (S) FIN

Department: Department of Law
Appropriation: Civil Division
Allocation: Labor and State Affairs
OMB Component Number: 2718

Expenditures/Revenues

Note: Amounts do not include inflation unless otherwise noted below. (Thousands of Dollars)

	FY2015 Appropriation Requested	Included in Governor's FY2015 Request	Out-Year Cost Estimates					
			FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
OPERATING EXPENDITURES								
Personal Services								
Travel								
Services								
Commodities								
Capital Outlay								
Grants & Benefits								
Miscellaneous								
Total Operating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Fund Source (Operating Only)

None							
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Positions

Full-time							
Part-time							
Temporary							

Change in Revenues							
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Estimated SUPPLEMENTAL (FY2014) cost: 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY2015) cost: 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

ASSOCIATED REGULATIONS

Does the bill direct, or will the bill result in, regulation changes adopted by your agency? No
If yes, by what date are the regulations to be adopted, amended or repealed?

Why this fiscal note differs from previous version:

Initial version, not applicable.

Prepared By:	Loretta Withington, Division Operations Manager	Phone:	(907)465-5427
Division:	Department of Law	Date:	04/01/2014 04:55 PM
Approved By:	Michael C. Geraghty, Attorney General	Date:	04/01/14
Agency:	Department of Law		

FISCAL NOTE ANALYSIS

STATE OF ALASKA
2014 LEGISLATIVE SESSION

BILL NO. CSSCR 16(RES)

Analysis

SCR 16 makes requests to both the Governor and the Attorney General. The Attorney General is requested to report on the legal costs of building a coal electric power generation plant on state land. This report will estimate costs to obtain federal permits and comply with federal law. It will also analyze the likelihood of associated litigation. The Attorney General's report would supplement requests directed to the Governor to investigate and report on several topics relating to the potential use of coal resources in Alaska. The topics include costs and potential public benefits associated with a large, mine-mouth coal facility, without regard to federal law or regulatory restrictions. Technological options for converting coal to useful products, including synthetic fuels. And, infrastructure associated with developing coal generation and uses. The infrastructure includes high voltage direct current transmission of power outside the Railbelt, and infrastructure associated with transporting coal and uses of carbon emissions.

The department believes it can complete the requested report from the Attorney General within its current budget.

ALASKA STATE LEGISLATURE

Session

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Senator Pete Kelly

Senate District B

The Case for Coal

Why should we discuss coal?

- Just like an investment portfolio, diversification in an energy portfolio is key to stable energy pricing
- The Lower 48 uses a mix of coal (35-50%), gas (20-30%), Nuclear (20%) and a mix of other minor sources to provide it energy to Americans
- Alaska, on the other hand, relies on over 70% of its electrical generation fuel on gas and oil, with hydro kicking in just over 20%
- We have added an additional 450 MW of generation capacity, using oil or gas, in the Railbelt over the past decade. This includes GVEA's North Pole plant (naphtha, a derivative of oil), CEA/ML&P (gas), MEA (Gas with oil back-up) and HEA (gas)
- Pricing – when gas was \$2 per unit in Cook Inlet and oil was coming in at \$45 per barrel, these sources were affordable, although the coal fired power in Healy and Fairbanks was always at or near the cheapest power even at these prices
- Since 2000, we now have oil at \$100 per barrel, and gas in Cook Inlet is now running \$6.50 per unit. This has pushed electric prices up
- Gas delivered to South-central via the in-state gas line is projected to be delivered at between \$9.50 and \$11 per unit. While it might solve supply, it comes at a cost

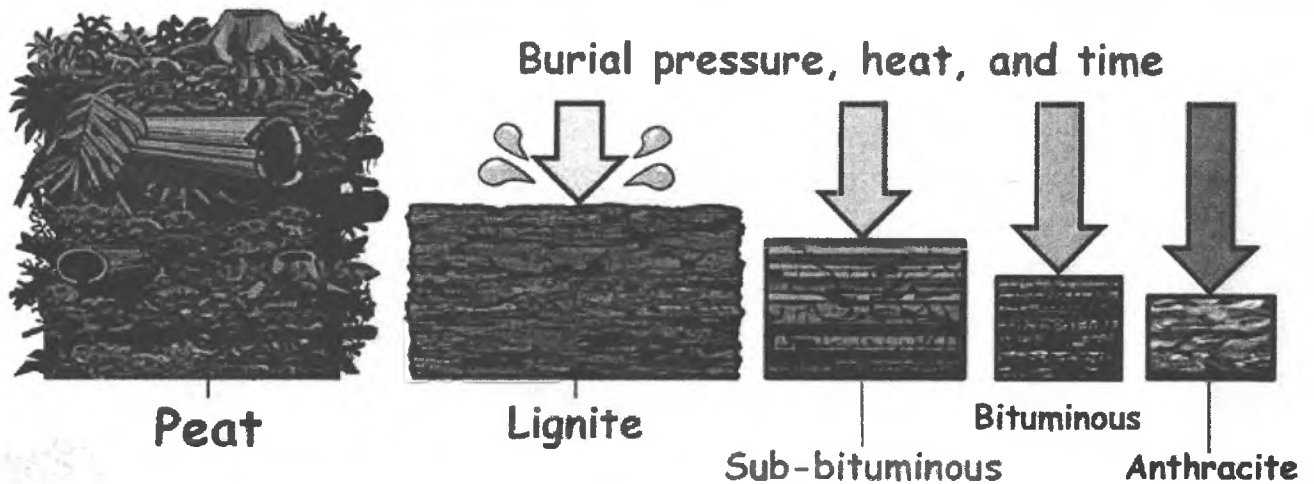
Alaska's utilities should not ignore the supply and economic advantages of coal fired power. RW Beck conducted a study in 2003 for the State and suggested two large coal fired units be added to the Railbelt grid for cost stabilization and diversity. Coal is our bridge to a cleaner tomorrow.

While we may desire renewable energy sources in the future, for renewables to be a viable and dependable energy option, we're going to need other sources, such as coal, gas, to get there. Coal and renewables are not adversaries – they're partners. They work to balance each other's weaknesses so we can meet our nation's growing energy needs in a smart and responsible way.

Fun facts about Coal

[KGS Home](#) > [Coal](#) > [Coal Information](#)

Classification and Rank of Coal



For more information about download this image, please click [here](#).

The kinds of coal, in increasing order of alteration, are lignite (brown coal--immature), sub-bituminous, bituminous, and anthracite (mature). Coal starts off as peat. After a considerable amount of time, heat, and burial pressure, it is metamorphosed from peat to **lignite**. Lignite is considered to be "immature" coal at this stage of development because it is still somewhat light in color and it remains soft. As time passes, lignite increases in maturity by becoming darker and harder and is then classified as **sub-bituminous** coal. As this process of burial and alteration continues, more chemical and physical changes occur and the coal is classified as **bituminous**. At this point the coal is dark and hard. **Anthracite** is the last of the classifications, and this terminology is used when the coal has reached ultimate maturation. Anthracite coal is very hard and shiny.

The degree of alteration (or metamorphism) that occurs as a coal matures from peat to anthracite is referred to as the "rank" of the coal. Low-rank coals include lignite and sub-bituminous coals. These coals have a lower energy content because they have a low carbon content. They are lighter (earthier) and have higher moisture levels. As time, heat, and burial pressure all increase, the rank does as well. High-rank coals, including bituminous and anthracite coals, contain more carbon than lower-rank coals which results in a much higher energy content. They have a more vitreous (shiny) appearance and lower moisture content than lower-rank coals.

<http://en.wikipedia.org/wiki/Coal>

Coal as fuel

Further information: *[Electricity generation](#), [Clean coal technology](#), [Coal electricity](#), and [Global warming](#)*

Coal is primarily used as a solid fuel to produce electricity and heat through combustion. World coal consumption was about 7.25 billion tonnes in 2010^[35] (7.99 billion short tons) and is expected to increase 48% to 9.05 billion tonnes (9.98 billion short tons) by 2030.^[36] China produced 3.47 billion tonnes (3.83 billion short tons) in 2011. India produced about 578 million tonnes (637.1 million short tons) in 2011. 68.7% of China's electricity comes from coal. The USA consumed about 13% of the world total in 2010, i.e. 951 million tonnes (1.05 billion short tons), using 93% of it for generation of electricity.^[37] 46% of total power generated in the USA was done using coal.^[38]

% weight	Anthracite	Bituminous	Sub-Bituminous	Lignite
Heat Content (Btu/lb)	13,000-15,000	11,000-15,000	8,500-13,000	4,000-8,300
Moisture	< 15%	2 - 15%	10 - 45%	30 - 60%
Fixed Carbon	85 - 98%	45 - 85%	35 - 45%	25 - 35%
Ash	10 - 20%	3 - 12%	≤ 10%	10 - 50%
Sulfur	0.6 - 0.8%	0.7 – 4.0%	< 2%	0.4 – 1.0%

Alaska's Coal Resources

DNR/DGGS Special Report #66: Fossil and Geothermal Energy Sources for Local Use in Alaska:

North Slope Coal: The Colville Basin may contain as much as 1/3 the total coal in the US. Possibly 3.2 trillion short tons of bituminous to subbituminous rank. Wainwright, Atkasuk, Point Lay and Point Hope are close to known outcrops of usable coal.

Cook Inlet – Susitna has an estimated 11 billion short tons of coal. The Beluga-Yentna region is estimated to contain 30 billion tons, with the Beluga Field the largest, located 45 miles west of Anchorage.

Nenana Coal province is estimated to contain 10 billion short tons of lignite and subbituminous coal.

Alaska's coal is ultra-low in sulfur and trace elements, including mercury.

Identified Alaska Coal Resources by Province		
Province/Coal Field	Millions of short tons	Coal Rank
<i>Northern Alaska Province</i>		
		High-volatile bituminous & subbituminous; extensive lignite and minor anthracite
	150,000	(Identified resources)
	~3,600,000	(Hypothetical resources)
<i>Cook Inlet-Matanuska Province</i>		
Beluga and Yentna fields	10,000	Sub-bituminous
Kenai field (onshore only)	320	Sub-bituminous
Matanuska field	150	High-volatile bituminous to anthracite
Broad Pass field	50	Lignite
Susitna field	110	Sub-bituminous
<i>Nenana Province</i>		

Nenana basin proper	7,000	Sub-bituminous
Little Tonzona field	1,500	Sub-bituminous
Jarvis Creek field	75	Sub-bituminous
<i>Alaska Peninsula Province</i>		
Chignik and Herendeen Bay fields		
Unga I.	430	High-volatile bituminous
<i>Gulf of Alaska Province</i>		
Bering River field	160	Low-volatile bituminous to anthracite
<i>Yukon-Koyukuk Province</i>		
Tramway Bar field	15	High-volatile bituminous
<i>Upper Yukon Province</i>		
Eagle field	10	Sub-bituminous and lignite
<i>Seward Peninsula Province</i>		
Chicago Creek field	4.7	Lignite

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Senator Pete Kelly

Senate District B

Senate Concurrent Resolution 16 – Requesting the Governor to Investigate Coal Resources Sponsor Statement

Senate Concurrent Resolution 16 requests the Governor investigate the development of a large coal power plant and associated electric grid and to evaluate the costs and benefits of coal-generated energy with respect to other energy sources.

Today, it is unfashionable to talk about our most abundant energy source, Coal. Alaska has enough coal to provide for peoples' needs for hundreds of years. It is a plentiful and inexpensive source of energy. Coal power plants are more efficient than ever. Some proposed and experimental plants even remove carbon dioxide. Coal is far more abundant globally than either oil or natural gas.

Fashions change, but if we fail to have this conversation today, we will have failed to keep this option open for future generations of Alaskans. This is that day, and we need to advance the conversation on coal today so it remains in our vernacular for tomorrow.

Yes, coal requires mining, and there are individuals and corporate entities that attack any effort to disturb the earth so as to provide for mankind. They are part of the conversation, but often shout too loudly about issues of possible relevance outside, that do not apply to Alaska's coal.

Coal can be used to heat homes, it can power communities. Alaska has 40 percent more coal than the Lower 48. Alaskan coal is ultra-low sulfur fuel without concentrations of trace elements considered harmful and is the cleanest not only in the United States, but perhaps the world. It is the ideal fuel, with the best chance of attaining the mandates of the 1990 Clean Air Act amendments.

Coal is not just our past, but is also part of our future. We have the ability to secure Alaska's energy independence with a resource that is abundant in our state. SCR 16 will help keep coal in our consciousness as a solution to our energy needs.

Please join me in supporting SCR 16

From: Rajive Ganguli [mailto:rganguli@alaska.edu]
Sent: Friday, February 28, 2014 5:42 PM
To: Bruce Campbell
Subject: Re: Chemistry of Alaska Coal specifically Mercury

From what I have found in the past, UCM coal has a lower level of contaminants than coals from WV etc.

1) As to mercury, see Table 3.6 in my 2008 report to DOE (attached). The Hg level in the stack emission (i.e. in the smoke that leaves the power plant) was very low - being close to detection limits.

3.1.5 Emissions Data

Table 3.6 lists the total Hg (mercury) data (particle bound, oxidized, and elemental) on the stack gas samples taken for Tests 23 and 24. Note that Hg testing was added to the project at the very end. A contractor (Alaska Source Testing, Anchorage, AK) was hired to sample the stack gases and measure Hg emissions using the Ontario-Hydro method.

Table 3.6. Hg emissions through the stack

	Hg, kg/hr (lb/hr)	Hg type (percent of total)		
		Particle bound	Oxidized	Elemental
Test 23 (finer)	0.000408 (0.000760)	0.19	34.03	65.78
Test 24 (coarser)	0.000300 (0.000663)	0.66	14.02	85.31

2) As to feed coal, see my 2012 report to US Air Force (this was a chapter in a bigger UAF-wide report). In Tables 2 and 3, see the values for sample C074 (raw coal). Thus, the UCM coal showed up as having 0.067 mg of mercury (Hg) per kg.

Table 2: Coal and ash characterization

Sample		C070	C071	C072	C073	C074
Test	Unit					
AS RECEIVED BASIS						
Total Moisture	% wt	8.84	8.97	10.06	9.42	27.98
Ash	% wt	1.76	0.93	0.71	0.44	8.50
Volatile Matter	% wt	48.63	48.89	48.47	49.02	35.34
Fixed Carbon	% wt	40.77	41.21	40.76	41.12	28.18
Sulphur	% wt	0.26	0.26	0.26	0.26	0.09
DRY BASIS						
Ash	% wt	1.93	1.02	0.79	0.49	11.80
Volatile Matter	% wt	53.34	53.71	53.89	54.12	49.07
Fixed Carbon	% wt	44.73	45.27	45.32	45.39	39.13
Sulphur	% wt	0.29	0.28	0.29	0.29	0.13
Calorific Value - Gross (as received)	BTU/lb	10378	10444	10350	10461	7489
Calorific Value - Gross (dry basis)	BTU/lb	11384	11474	11508	11549	10399
Calorific Value - Net (as received)	BTU/lb	9852	9923	9818	9936	6887
Calorific Value - Net (dry basis)	BTU/lb	10908	11003	11032	11077	9966
ULTIMATE ANALYSIS (dry basis)						
Carbon	% wt	66.44	67.36	67.19	67.46	59.15
Hydrogen	% wt	5.14	5.08	5.13	5.09	4.67
Nitrogen	% wt	0.77	0.78	0.78	0.78	0.65
Sulphur	% wt	0.29	0.28	0.29	0.29	0.13
Ash	% wt	1.93	1.02	0.79	0.49	11.80
Oxygen (diff)	% wt	25.43	25.48	25.82	25.89	23.60

C070 – Nitric Acid Leach (5 mins), followed by 2 hour HF leach (2Molar):

C071 – Nitric Acid Leach (5 mins), followed by 4 hour HF leach (2Molar):

C072 – Nitric Acid Leach (5 mins), followed by 8 hour HF leach (2Molar):

C073 – Nitric Acid Leach (5 mins), followed by 16 hour HF leach (2Molar):

C074 – Raw Coal

Table 2: Coal and ash characterization (continued)

Sample		C070	C071	C072	C073	C074
MINERALS OF ASH						
Alumina, Al ₂ O ₃	%	10.55	12.36	10.09		16.96
Barium Oxide, BaO	%	0.26	0.39	1.01		0.46
Lime, CaO	%	7.89	2.83	3.74		20.52
Ferric Oxide, Fe ₂ O ₃	%	5.88	9.08	11.13		7.10
Potassium Oxide, K ₂ O	%	2.24	2.35	1.94		1.05
Magnesia, MgO	%	2.60	0.93	0.92		3.26
Manganese Oxide, MnO	%	0.04	0.06	0.08		0.14
Sodium Oxide, Na ₂ O	%	0.80	0.29	0.30		0.17
Phos. Pentoxide, P ₂ O ₅	%	0.14	0.25	0.30		0.09
Silica, SiO ₂	%	50.88	58.41	52.43		39.21
Strontium Oxide, SrO	%	0.05	0.05	0.07		0.17
Titania, TiO ₂	%	3.05	5.47	6.67		0.71

C070 – Nitric Acid Leach (5 mins), followed by 2 hour HF leach (2Molar);

C071 – Nitric Acid Leach (5 mins), followed by 4 hour HF leach (2Molar);

C072 – Nitric Acid Leach (5 mins), followed by 8 hour HF leach (2Molar);

C073 – Nitric Acid Leach (5 mins), followed by 16 hour HF leach (2Molar);

C074 – Raw Coal

Table 3: Trace Element Analysis

Sample ID:*		C070	C071	C072	C073	C074
TRACE ANALYSIS * (air dry basis)						
Vanadium	mg/kg	2.88	2.08	2.07	1.99	10.5
Chromium	mg/kg	13.4	12.6	12.3	11.8	8.36
Nickel	mg/kg	6.6	6.06	5.8	5.7	5.88
Zinc	mg/kg	9.2	4.86	4.02	3.29	3.10
Arsenic	mg/kg	2.31	1.32	2.57	2.46	1.15
Selenium	mg/kg	2.02	0.759	1.06	1.01	0.637
Cadmium	mg/kg	0.173	0.099	0.074	0.053	0.109
Mercury	mg/kg	0.051	0.102	0.115	0.099	0.067
Lead	mg/kg	1.89	1.92	1.83	1.70	2.02

C070 – Nitric Acid Leach (5 mins), followed by 2 hour HF leach (2Molar);

C071 – Nitric Acid Leach (5 mins), followed by 4 hour HF leach (2Molar);

C072 – Nitric Acid Leach (5 mins), followed by 8 hour HF leach (2Molar);

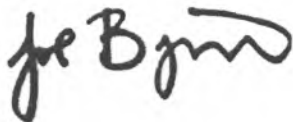
C073 – Nitric Acid Leach (5 mins), followed by 16 hour HF leach (2Molar);

C074 – Raw Coal

Doniece Gott

From: Sen. Pete Kelly
Sent: Wednesday, March 19, 2014 9:47 AM
To: Senate Finance Committee
Subject: FW: SR 16

Public testimony



Joe Byrnes

Staff for Senator Pete Kelly
907-456-3709



From: Teresa de Lima [<mailto:alaskanberries@gmail.com>]
Sent: Tuesday, March 18, 2014 21:04
To: Sen. Click Bishop; Sen. Kevin Meyer; Sen. Pete Kelly; Ron Clarke; Rep. Scott Kawasaki
Subject: SR 16

"Please include this in public record and distribute to Senate Finance committee members."

Dear Members Bishop, Kelly and Meyer:

I would like to explain to you why as multi-generational Alaskan I'm vociferously against what you are proposing as it relates to this large coal power plant and associated electrical grid "without regard to federal permits or restrictions." I do not feel that the state of Alaska public servants have done a good job of stewardship - of oversight or enforcement of state or local or federal regulations which are in place to protect human health.

I am a firm believer that the state of Alaska has simply shrugged it's shoulders when it comes to environmental damage to health and property as it relates coal combustion waste and emissions issues specifically as it relates to the Aurora Energy Power plant in the downtown Fairbanks area.

I am vehemently opposed to any effort by the state of Alaska to endorse industry development of coal fired power plants in Alaska specifically because of the state's dismal failure to uphold and enforce oversight of current industry activity- Aurora Energy Power Plant, incredibly allowed the stature of an LLC). Shame on the SOA and Shame on ADEC.

Poor oversight of existing activity, to include the apparent propensity for rolling over to industry and the ongoing "shrug of shoulders" attitude, contributes to human health impacts such as neurological, musculature, cardiac and respiratory problems. Not to mention the resultant coal combustion waste which when produced poses a huge problem of safe and responsible disposal. People's health and property values are impacted negatively with coal combustion waste wantonly dumped wherever there's room for it.

At the end of this March 2014, we are to hear from the head epidemiologist of the State of Alaska, DHSS Ali Hamade and the superfund investigator EPA Clean Up Inspector, Brandon Perkins, with

regards to the EPA Investigation of the Aurora Energy Power Plant in Down Town Fairbanks' RESIDENTIAL AREA of First AVenue, State Street to 4th AVenue, Badger Street as to a health assessment and what the health implications are to property owners and residents from the fallout of the power plant.

I highly encourage you to carefully reconsider any ideas of coal development with Alaska's inferior coal. The health impacts are enormous.

**Written Testimony of Pamela Miller, Executive Director, Alaska Community Action on
Toxics**

**SCR 16—A resolution to request the governor to investigate development of large coal power
plants**

March 18, 2014

Dear Co-Chairs Kelly and Meyer and Members of the Finance Committee:

My name is Pamela Miller, Executive Director of Alaska Community Action on Toxics, a statewide environmental health organization of scientists, public health professionals, and community advocates that conducts research and provides educational programs, technical assistance, and training. We thank you for this opportunity to provide written testimony, as I was unable to attend the hearing this morning. I notice that consideration of SCR 16 is currently tabled, so I provide these comments for your consideration in future discussions. Although we understand that you are trying to solve complex energy and economic problems, we respectfully urge you not to support this measure because of the serious public health implications associated with the development of coal and coal-fired power plants. Coal is not the solution or a suitable "bridging fuel" because it is too costly to the health of Alaskans—instead, please pursue opportunities to increase energy efficiency and safe, clean renewable energy options that protect public health.

The evidence linking coal and disease is strong, with new research adding to this evidence appearing frequently in the peer-reviewed scientific and medical literature. Recent articles in major medical journals provide disturbing estimates of the morbidity and mortality associated with burning coal. Mining, transporting, burning, and disposal of the hazardous wastes of coal combustion, all have major adverse effects on our health. Among the health conditions that are associated with and/ or exacerbated by exposure to hazardous emissions from coal-fired power plants include asthma, stunted lung development, infant mortality, cardiopulmonary diseases (such as cardiac arrhythmias, acute myocardial infarctions, and congestive heart failure), and ischemic strokes. Our study of coal combustion wastes in Fairbanks showed the presence of elevated levels of arsenic and vanadium at concentrations of concern to health. Exposure to these contaminants is associated with harmful health effects such as cancer, neurological and developmental defects. Additional studies completed in the last year show the presence of highly toxic dioxins and heavy metals in the coal ash in Fairbanks.

Coal combustion is also a major source of mercury emissions. Mercury is converted by bacteria to methylmercury upon deposition in aquatic environments where this persistent toxin bioaccumulates and biomagnifies in the food web, thus contaminating fish that are so important in Alaska for subsistence and commercial uses. Mercury exposures, even at extremely low levels, are particularly devastating to young children, causing damage to the developing brain, birth defects, developmental delays, reduced IQ and permanent loss of intelligence, as well as impaired memory, motor ability, and language function. When a mother is exposed to mercury

through consumption of contaminated fish, her developing child is exposed because it crosses the placenta and is concentrated further in the baby.

We count on you to make wise decisions for the benefit of all Alaskans. Please consider the serious public health consequences that would result from further coal development and combustion in our state and look to safer and available alternatives. Thank you for your consideration of these comments.